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# 'STAR WARS' DEFENSES

## Science or science fiction?

By Len Ackland

**R**ICHARD GARWIN, an IBM Corp. physicist and longtime government defense consultant, recently told a congressional committee that he has come up with a "truly effective, near-term, low-cost" system to defend against Soviet intercontinental ballistic missiles (ICBMs).

"This system consists simply of a machine gun mounted on a tripod near each Soviet [missile] silo, with a gunner at the ready," Garwin, 56, told the Senate Armed Services Committee on April 24. "When the SS-18 or other ICBM is launched, the gunner fires, stitching a row of holes down the side of the missile, reducing its appetite for carrying out its mission."

"Effective, yes; satisfactory, no; the problem is the total vulnerability of this defense. That is also the problem with many of the approaches considered" in the Strategic Defense Initiative.

That government initiative, also known as the Ballistic Missile Defense or "Star Wars" program, was kicked off by President Reagan's surprise March 23, 1983, announcement of a push to create a high-technology defense system to protect the U.S. population and the nation's allies against a Soviet missile attack.

**IN HIS SPEECH**, the President urged "the scientific community, those who gave us nuclear weapons, to turn their great talents now to the cause of mankind and world peace, to give us the means of rendering these nuclear weapons impotent and obsolete."

In the last 14 months, the public has been given a glimpse of a host of exotic, hypothetical space-based weapons—from X-ray lasers produced by nuclear explosions to particle beams shot from atom smashers—that scientists have in the research or conceptual stage.

Pentagon-sponsored studies and officials, including the President's science adviser, say such weapons and related surveillance and tracking systems are "promising," and the administration is seeking an initial outlay of \$26 billion for research and development over the next five years.

**YET OTHER** scientists are in vocal opposition to the "Star Wars" scheme, arguing that an international agreement to ban weapons in space is the best guarantor of security. Many claim that such a defense system not only is largely science fiction, but that it is dangerous

science fiction that could result in false public hopes, heighten adversaries' fears and increase the chance of nuclear war.

"The prospect that emerging 'Star

Wars' technologies, when further developed, will provide a perfect or near-perfect defense system . . . is so remote that it should not serve as the basis of public expectation or national policy about ballistic missile defense," wrote Ashton Carter, a Massachusetts Institute of Technology physicist, in an April, 1984, study for the congressional Office of Technology Assessment.

"This judgment appears to be the consensus among informed members of the defense technical community," continued Carter, who interviewed scientists working at Lawrence Livermore National Laboratory, the Los Alamos National Laboratory and the Central Intelligence Agency, as well as at other agencies.

Although today's grim line-up of nuclear weapons is primarily offensive, with the U.S. and USSR possessing more than 40,000 nuclear warheads, with the destructiveness

of 1 million Hiroshima bombs, the idea of defense has arisen before. In its absence, the nuclear stalemate rests on the idea of deterrence—each side being deterred from attacking the other by the knowledge that it would be destroyed by a counterattack.

**BASED ON THE CONCEPT** that "a bullet can hit a bullet," the U.S. and Soviet Union each began working on antiballistic missile (ABM) systems during the 1950s. A national debate similar to the one heating up today began in 1968, when Garwin and Nobel Prize-winning physicist Hans Bethe wrote an article in Scientific American magazine challenging the program. Among their critiques, they pointed out that it is much cheaper to counter defense systems by simply building more offensive systems to overwhelm the expensive, complex defenses.

By the late 1960s, the two sides had developed crude ABMs, but they agreed in 1972 to the ABM treaty, limiting each country to one system [which the Soviets had deployed around Moscow], while allowing research to continue.

Despite the ban on ABMs, hundreds of thousands of dollars have been spent yearly on researching

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